

REMARKS

The Examiner's Action mailed on May 18, 2009, has been received and its contents carefully considered. A Request for Continued Examination under 37 CFR §1.114 is submitted herewith.

In this Amendment, Applicants have amended claim 1, and cancelled claims 3 and 5 without prejudice. Claim 1 is the sole independent claim, and claims 1, 2, 4, 6 and 7 are pending in the application. For at least the following reasons, it is submitted that this application is in condition for allowance.

The drawings were objected to for failing to show every feature in the claims. It is respectfully requested that this objection be withdrawn.

Claims 3 and 5 have been cancelled, and a new drawing sheet is submitted herewith illustrating "the insulating film having an opening greater in size than the semiconductor chip when the surface of the solid state device facing the semiconductor chip is viewed from vertically above" as recited in claim 1.

Claims 3 and 5 were rejected under 35 USC §112, ¶1 as lacking in written description. This rejection is respectfully moot, claims 3 and 5 having been cancelled.

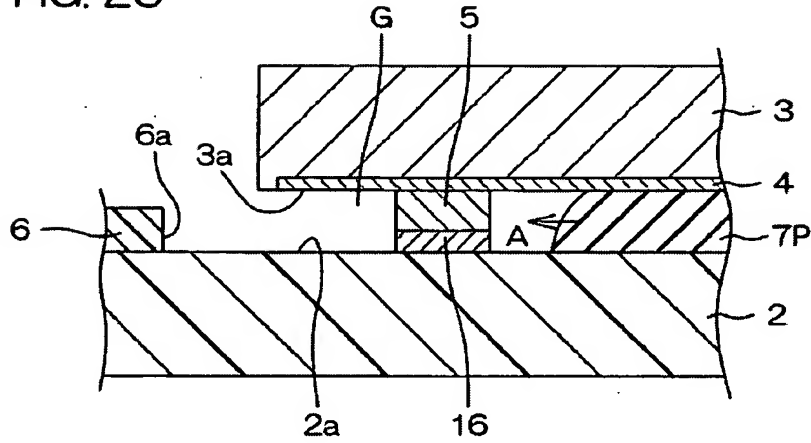
Claims 1, 2, 4-6 and 7 were rejected under 35 USC §103(a) as obvious over *Beddingfield et al.* (US 5,710,071) in view of *Tung* (US 2002/0033412 A1). This rejection is respectfully traversed.

Claim 1 as amended recites “a pillar-shaped connecting member configured to connect the functional surface of the semiconductor chip to the surface of the solid state device, *a width of the pillar-shaped connecting member being constant*”.

In the non-limiting example of FIG. 2C, as reproduced on the following page, the claimed “pillar-shaped connecting member” includes both connecting member **5** and connecting pad **16**.

ANNOTATED DRAWING

FIG. 2C



- 2 - wiring board
- 2a - surface of wiring board
- 3 - semiconductor chip
- 3a - functional surface of semiconductor chip
- 4 - functional element
- 5 - connecting member
- 6 - solder resist film
- 6a - opening
- 7P - underfill material
- 16 - connection pad
- A - direction in which underfill spreads
- G - gap

As shown in FIG. 2A-2D of the present application, the connecting member **5** having a constant width is obtained by connecting the connection pad **16** with the projection electrode **18**, the connection pad **16** and the projection electrode **18** each having the same and constant width.

The Office Action admits on page 7 thereof that *Beddingfield et al.* fails to teach or suggest “a pillar-shaped connecting member configured to connect the functional surface of the semiconductor chip to the surface of the solid state device” as recited in claim 1, and alleges that this is disclosed by *Tung*.

The Office Action alleges that, in FIG. 2E and 2F of *Tung*, two elongated pillars **16'**, each including a copper portion **16a** and a solder portion **16b'** correspond to the claimed “pillar-shaped connecting member”.

Please Note: As *Tung* was actually published without any figure numbers, Applicant has perforce had to attempt to identify the drawings by comparison with the drawings of corresponding issued patent US 6,592,019 B2, which, however, are not identical to those of the published application actually cited in the Office Action.

However, as far as FIG. 2E and 2F of *Tung* can be identified, they appear to show intermediate steps, where the actual structure contemplated by *Tung* is shown in FIG. 2G, where the pillars do *not* have a constant width, but where they

include a copper portion **16a** and a solder portion **16b**, where the solder portion **16b** is *tapered* instead of having a constant width.

Thus, neither *Beddingfield et al.* nor *Tung*, whether taken separately or in combination, teach or suggest “a pillar-shaped connecting member configured to connect the functional surface of the semiconductor chip to the surface of the solid state device, *a width of the pillar-shaped connecting member being constant*”, as recited in amended claim 1.

Consequently, claim 1 patentably defines over *Beddingfield et al.* and *Tung*, and is allowable, together with claims 2, 4, 6 and 7 that depend therefrom, claim 5 having been cancelled.

Claim 3 was rejected under 35 USC §103(a) as obvious over *Beddingfield et al.* in view of *Tung*, *Urasaki et al.* (US 6,281,450 B1) and *Thompson et al.* (US 5,218,234). This rejection is respectfully moot, claim 3 having been cancelled.

It is submitted that this application is in condition for allowance. Such action and the passing of this case to issue are requested.

Should the Examiner feel that a conference would help to expedite the prosecution of this application, the Examiner is hereby invited to contact the undersigned counsel to arrange for such an interview.

Should the remittance be accidentally missing or insufficient, the Commissioner is hereby authorized to charge the fee to our Deposit Account No. 18-0002, and advise us accordingly.

Respectfully submitted,



August 18, 2009
Date

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